Public healthcare management and achieving excellence of slovenian physicians

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Abstract - The purpose of the article is to determine excellence in the implementation of Slovenian physicians' work in public healthcare and the influence of quality management and excellence in public healthcare, and, above all stress management and health preservation of Slovenian physicians. Leading employees nowadays pose a particular challenge for every manager. Healthcare system is an organised system with the function to take care about the fulfilment of objectives linked to a better and more efficient health status and life quality of population. Medical care is financed by compulsory health insurance contributions, voluntary health insurance, by expenses from private means and by budget appropriations. On one hand, with their competency, knowledge, quality implementation of work, physicians take care about successful treatment of patients on a daily basis. On the other hand, there is a question whether public healthcare dedicates enough attention to physicians, so that they can achieve the highest level of excellence. In the research conducted among Slovenian physicians from the primary and tertiary level of public healthcare, we alleged the statements about the excellence of Slovenian physicians in public healthcare. This research is our contribution to the improvement of Slovenian physicians' excellence in public healthcare.

Key words: - Management, organisation, excellence, Slovenian physicians, public healthcare, research.

1 Introduction

The term excellence has been used for a long time in different areas and on different levels, for example, in sport, art, culture. However, it refers to an individual and his or her results, as well as to a product or service provided.

The first uses of excellence in the field of quality in Slovenia, and especially in Europe, appeared already in 1990, when quality awards were introduced. The most renowned awards based on specific models are [1] European Excellence Award, Malcom Baldrige National Quality Award (USA), Deming Award (Japan) and others. Nowadays, almost every European state has its own quality award based on the European model of excellence, which is considered as an incentive for quality at the national level.

The importance of excellence for quality was shaped throughout the historical development of quality, since strong leaders were the ones who led employees and took care of business operations. They contributed a lot to organisations' excellence with their knowledge and creativity.

The structure of all systems depends mostly on people, organisational culture, values, as well as on moral and ethical level of the environment in which the organisation operates, but above all, it depends on management quality.

A good manager must be able to look for the right levers to award the worker who carries out his or her work professionally, in a responsible, good or even excellent way. However, a good manager must look for the way to award or praise the worker and not to destroy their motivation for work and their values. On the other hand, the worker who does not carry out his or her work professionally, but rather carelessly, should be informed about wrong decisions or poor work performance in order to improve it and learn from his or her own errors. Maybe such a worker is not even aware of how poor his or her work performance is [2].

The introduction of excellence in organisations and other institutions requires cultural and organisational changes. At the same time, all employees should be actively involved and motivated for the introduction of excellence.

The identification of quality management approaches is significantly important for change management: the European version of Deming's P_D_C_A (Plan-Do-Check-Act) is the matrix R-A-D-A-R (Results-Approach-Deployment-Assessment-Review result) [3], Model Six Sigma [4], 20 k eys model [5] according to Kaplan and Norton, as well as the approach BSC (Balanced Scorecard) [6].

The European vision of quality [7] is the basis for the statement that Total Quality management (TQM) is one of the most important innovations of the 20th century. EQA model was subject to significant substantial amendments and was renamed to 'Model excellence EFQM / The EFQM Excellence Model.' Business excellence is defined as the highest level of quality based on learning and innovation.

The management process is management of organisation's operation and leading people through the work and organisation's operation towards the achievement of results. It is possible and necessary to consider the management process in several aspects, as the researchers [8], [9], [10] have done. These aspects are as follows: economic, social, psychological, philosophical, innovative, technical and other aspects.

According to Calvo-Mora et al.'s definition [11], the effectiveness ensures management quality by identifying factors to achieve management excellence as a system process.

Technological errors [12] in a production company, service company, or an institute appear unexpectedly. Therefore, the causes should be identified in order to solve the errors by applying different technologies and procedures.

Lean manufacturing and a lean institution imply cost reduction, the achievement and improvement of quality management, as well as the achievement of the best performance, irrespectively of the field of operation. The relation between personal needs, interests, values, convictions of every individual in the society in which he or she operates is defined as social responsibility. The way towards excellence leads through social responsibility. Social responsibility does not imply a cost for an

organisation, but has positive effects on economy and sustainable development.

Leading means to motivate employees to perform tasks with the objective of the achievement of results. It is also a direct communication between employees and organisations' managers.

Hospital employees are exposed to (micro-) biological, chemical, physical, biomechanical and psychological health risks (European Agency for Safety and Health at Work). [13] Management in Slovenian public healthcare is based on Bismarck model, which means that all employers and employees are compulsorily insured, contributions payment is compulsory and public health insurance is prescribed by law. Such system is also applicable in other European countries, namely: Germany, Austria, Belgium, France, Luxemburg and the Netherlands.

In order to achieve better results, it is required to change the system that indicates a general cause of the variability and human behaviour in it; therefore, when a system provides good results, it means that its concept is excellent [14]. Throughout historical periods, four basic healthcare models have been established:

- Bismarck model,
- Beveridge model,
- Semašek model,
- commercial model.

In the case of Beveridge model, the state gathers the resources by collecting taxes, prescribes the organisation of healthcare institutions and payment of their services. The state provides the entire social care and healthcare to the citizens. The system is introduced in Great Britain and applicable in other states, such as Denmark, Finland, Italy, Canada and Sweden.

Based on socialist principles, Semašek model differs from the Beveridge model by ideology. In this model, private practice and work of physicians was not possible. This model was in use in the Soviet Union, and elements of this system were visible in the former Yugoslavia as well.

Commercial model is a p rofit-oriented healthcare system. For this system, the principle of free market, based on the offer and demand, is significant. It consists of private insurance companies, which are entitled to refuse insured persons. Insured persons pay premiums according to the program and risks they choose. This system is not socially oriented. It is applicable in the United States of America.

Nowadays, the majority of healthcare systems apply the costs sharing principle.

In the commercial system, healthcare is an asset, whereas in the social system, it is a value. Property can be national – national healthcare, it can be private – as in commercial system (USA), and mixed – as in Slovenia, for example.

Hospitals—as a p art of public healthcare activity on the tertiary level, and other healthcare institutes in public healthcare on the primary level—in the past were considered as environments [15] that, as a r ule and exclusively, were focused on the diagnostics and treatment of individuals' diseases, and not as environments that provided the possibility for health promotion and therefore the improvement of quality of life.

At the same time, we have to mention the ethics of professionalism in medicine, which includes the characteristics and behaviours of physicians within the medical profession [16]. Here we can define desirable and undesirable physicians' characteristics. Desirable behaviours of physicians are the following: altruism, responsible behaviour, excellence, sense of duty, honourable behaviour, respect of integrity, respect of others, commitment to lifelong learning, and other. On the other hand, physicians' undesirable behavioural characteristics include the following: abuse of powers, prejudice, sexual harassment, breach of confidentiality, arrogance, greed, lack of conscientiousness, behaviour contrary to the interests of the profession.

A well-accepted, affirmed and knowledge-oriented organisational culture and interpersonal relations between employees—including the observance of ethical principles and norms [17] in the internal environment, and partners in the external environment—enable organisational performance based on quality management and management excellence in organisations and public institutes.

Rani in the studies [18] and [19] defines the importance of motivation in general, and motivation at work, as well as work experience, which provide the possibility of the application of an individual's abilities when working with the systems of promotion and training, and indirectly, as far as organisational affiliation is

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concerned. Because of overloads at work, the professional stress of physicians often appears slowly, unperceivably and unconsciously. Medicine is stressful, the work is linked to strong emotions, and physicians must be prepared to adapt to every situation and to deal with stress. The most frequent sources of stress in the implementation of physicians' work are the following: long workday, excessive workloads, inconstant working conditions, sleep deprivation, economic instability, and difficulties at following the innovations in case of older physicians.

By this empirical research, we wanted to get the answer to the question set. Further, the aim of the research is also to provide the answer and conclusions about the professional physicians' health promotion and preservation of quality personnel. The improvement of everyday work process increases the quality of services provided, employees' motivation, management quality and excellence of Slovenian physicians on both tertiary and primary level.

2 Methods

The data collection was performed between April 2016 and August 2016, by the use of a survey questionnaire. The questionnaire was distributed among physicians on the primary and tertiary level in hardcopy or as a link to the web survey, forwarded within the weekly newsletter to the members of the Medical Chamber of Slovenia. From the mentioned sources in that period, 266 answers were obtained, which is approximately 5% of the entire population of physicians on both primary and tertiary level. The majority of answers (54.9%) were collected through on site surveys in hospitals.

The survey questionnaire was rather extensive and included questions about physicians' current health status, stress and its causes, ways of relaxation, quality management, mark of excellence and demographic data. The cooperation in the research was voluntary, and the survey was anonymous.

Based on the theory, we designed the conceptual model, which we wanted to verify by modelling structural equations. We verify correlations among pairs of variables through structural models and, at the same time, we want to explain model variability as much as possible. Structural equation modelling (SEM) is the extension of general linear models, which

include multiple regression as well. SEM is a combination of confirmatory factor analysis and multiple linear regression, able to verify simultaneously the measurement instrument and structural connections among constructs [20]. SEM is used for confirmatory purposes, since we want to verify the suitability of conceptual model derived from the theory (a priori), as model's goodness of fit to data. The SEM analysis includes path analysis, and it is based on providing the validity of measurement model and on the suitability of structural model (path diagram).

We performed the exploratory factor analysis within the verification of conceptual model to reduce a large number of observed variables to a smaller number of latent variables (factors) [21].

Statistical analysis was performed in the software tool: IBM SPSS 22.0 with the add-on AMOS.

We verified the following hypotheses within the analysis:

H1: Quality management has a positive influence on stress management.

H2: Excellence of operation in healthcare has a positive influence on quality management.

H3: Health status has a positive influence on stress management.

H4: Stress management has a positive influence on stress reduction.

H5: Causes of stress are work overloads and overstraining at work.

Figure 1: Conceptual model

Based on the conceptual model (Figure 1), we assumed the factor of quality management, which consisted of the following dimensions: quality management in healthcare, information flows in healthcare, communication and mutual relations, as well as incentives from managers for employees' motivation. We measured the excellence factor through the marks of

excellence for the approach in public healthcare [22]. Variables observed in the model are stress management (*How much time do you spent for sport or recreation activities?*), stress (*How frequently do you feel tension, stress or big pressure?*), health status (*How do y ou assess your current health status?*) and stress causes (*Specify the causes that provoke tension and stress.* – The number of causes is also taken into account).

3 Results

In the research, physicians aged from 26 to 65 years participated, out of which 49.5% were women. The majority of participants belong to the age group between 35 and 45 years (38.3%), followed by the age group between 45 and 55 years (33.5%), and the age group between 55 and 60 y ears (17.6%). More than a third of participants (34.6%) has between 11 a nd 20 years of service, whereas 28.2% of participants have less than 10 years of service and approximately a fourth of participants (23.4%) have 21 and 30 years of service; meanwhile, the least numerous are the participants with more than 30 y ears of service (13.8%). For the majority of participants the highest acquired level of education is specialisation (54.8%), and this group is followed by groups of doctorate holders (20.7%) and participants with master's degree (13.3%), while 11.2% have completed only higher university education. Among all participants, 48.9% are employed in hospitals (tertiary level) and 51.1% are employed in medical health centres (primary level). More than half of participants (55.3%) are employed as specialist doctors, while 31.4% of participants work as g eneral practitioners. The least numerous among all participants are trainee specialised doctors (10.6%) and junior doctors (1.6%). The majority of participants (60.6%) are married, 17.6% of participants are single, 13.3% of participants live in non-marital partnerships, 5.3% of participants are divorced, and only 3.2% of participants are widowed.

More than 75% of participants are exposed to stress often or every day, and only 2.1% of participants are never exposed to stress. Sensations of tension and stress appear rarely in 15.4% of participants, and in 6.9%, such sensations are quite limited.

Approximately a half of participants (55.9%) described their current health status as middling;

they are followed by the participants who described their health as good (35.6%), while 5.9% of participants assessed their health as very good. Further, 2.1% of participants described their health status as poor, and 0.5% as very poor.

The percentage of respondents who are not engaged in sports activities at all is rather low (4.3%), approximately 40% of participants are engaged in sports 1 hour per week, 42.2% of respondents are engaged in sports from 2 t o 4 hours per week, and less than a fifth (14.1%) are engaged in sports activities at least 5 hour per week.

By the use of exploratory factor analysis, we searched for a lower number of variables, which exemplify the best of the above-stated factors. In this way, we obtain simpler and more transparent data structure. First, we have to verify whether the data are suitable for further analysis. We verified the relation between independent variables with the Bartlett test and Kaiser-Meyer-Olkin test (KMO). The higher the value of correlations between variables, the higher the sampling reliability, and the variables are more suitable for further analysis. The lower limit of suitable variability is from 0.5 to 0.6, the desirable value is from 0.7 upwards. We performed the factor analysis by the method of the maximum likelihood (ML) and by the use of oblique rotation with Kaiser normalisation. We set the number of factors by the use of our own values of variables (>1), scree diagram and interpretation of factors provided [23].

First, we cleaned the data and excluded extreme values (outliers). Then we replaced missing values by the linear interpolation, and then we verified multivariate normality by the Cox-Small test. After this, we examined relative variance of variables in the model. We introduced the path model in the program, as provided in the conceptual model, where particular influences represented the hypotheses. We used the analysis of paths of observed variables and constructs to verify the suitability of the structural model and relation between constructs. We performed the analysis SEM in several steps. First, we specified the model; i.e., we established exogenous and endogenous variables in the model. It is significant for exogenous variables that their causes are unknown, or we do not measure their causes. The identification of model included the evaluation of unknown parameters, such as path

coefficients and covariance. We used the method MLE to evaluate the model. In this way, we minimised the difference between observed and performed covariance matrices. The following step consisted of the verification of the model's goodness of fit to data, which included the verification of both absolute (RMSEA, GFI) and relative indicators (NFI, IFI, CFI) of goodness of fit. The task of absolute measures is the reproduction of observed covariance matrix, whereas the task of relative measures is the comparison of the baseline model with our theoretical model. We modified the model based on the information of modification indices, until we obtained the ideal solution.

Table 1: Indicators of suitability model	Absolute indicators of goodness of fit		Indicators of goodness of fit		
	p-value	χ^2/df	RMSEA	CFI	GFI	AGFI
Recommended values	>0.05	<3 good, <5 allowed	<0.05	>0.8–>0.95	>0.95	>0.8
Model	0.002*	2.61	0.093	0.873	0.954	0.894

The table 1 shows that the model's goodness of fit to data is suitable, according to SEM criteria.

Figure 2: Empirical model of structural linear equations
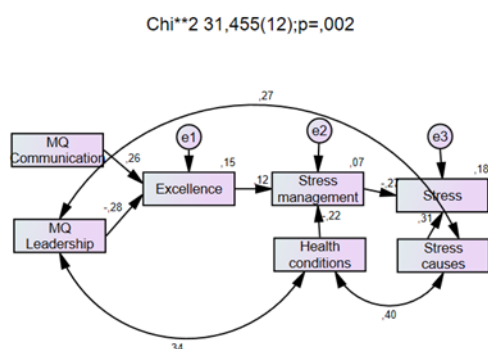
* Chi Square very readily reaches significance with large sample sizes even when all other indices indicate a good fit, and in this case, Chi Square is only just significant and its value is only slightly more than double the dfs.

Based on the model (Figure 2) we succeeded to confirm all stated hypotheses. According to our analysis, communication and mutual relations, as well as incentives from managers for employees' motivation, which is considered an aspect of quality management, significantly influence business excellence in public healthcare. We also established that leadership excellence influences stress management, and with this we confirmed the second hypothesis. The frequency of engagement in sports activities (as a way of coping with stress) has a negative influence on the exposure to stress (more sports activities decrease the stress burden), and this confirms the third hypothesis. We also confirmed that the number of health problems influences the frequency of engaging in sports activities in a negative way (as a way of coping with stress), and that the causes of stress influence the exposure to stress in a positive way.

4 Conclusion

The primary level is a network that enables to the population a quick and easy access to healthcare. The primary network consists of medical services of general medical practice, general practitioners and family medicine specialists. The primary level enables the first contact with the physician for the diagnostics of acute and chronic illnesses, health promotion, healthy lifestyle and other. It is organised in healthcare centres and medical posts.

The tertiary level of public healthcare activities includes specialist social medical, hygiene, epidemiological, and health and environmental activity at the state level. The most experienced professionals and physicians who provide the most complex services in the healthcare work at this level. They use the most complex equipment in their work. These services are very expensive and only a small percentage of population use them. The list of services that belong to this level differ in particular countries of the EU, which depends on available resources, development and qualification of professionals in particular countries.

We defined the comparison between the primary and tertiary level exactly because of the difference in workload and complexity of work of particular physicians, the required and actual professional qualification for their workplace, and knowledge and creativity regarding research

activities (i.e. the support in the medical aspect on the highest level).

Based on the research results, we conclude that physicians in Slovenian public healthcare are exposed to stress because of excessive workload, overstraining at work, inadequate working conditions and financial difficulties. We also conclude that permanent education and training of employees is required; moreover, the most important conclusion is that there exists the need for the investment in the development of information technologies, since they increase the quality of physicians' work. Furthermore, in the workplace, physicians are motivated the most by the possibility of the application of their abilities, payment for overtime hours, suitable working hours and bonus system. Physicians mostly do not trust their managers; only a third of physicians do. At the end, when it comes to the evaluation of approach excellence in public healthcare, we conclude that the public healthcare system—including the development of its mission, vision and values—is well designed as far as management quality is concerned, which, however, does not reflect well in practice.

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